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Status Report to the Attorney General on Body Armor Safety Initiative Testing and Activities

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NIJ

Sarah V. Hart
Director

Cover photograph of law enforcement officer by Larry Levine, courtesy of the Washington Metropolitan Area Transit Authority, 2001.

The National Institute of Justice is a component of the Office of Justice Programs, which also includes the Bureau of Justice Assistance, the Bureau of Justice Statistics, the Office of Juvenile Justice and Delinquency Prevention, and the Office for Victims of Crime.

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I. Introduction

On November 17, 2003, the Attorney General announced the U.S. Department of Justice's Body Armor Safety Initiative. As part of that initiative, he directed the National Institute of Justice (NIJ) to undertake a comprehensive body armor testing program and provide a status report in 90 days. The following is a status report on the NIJ body armor testing currently underway.

II. Body Armor Testing Program

A. Background of Testing Program

Lightweight body armor has been widely available for use by law enforcement personnel for close to 30 years. The lives of more than 2,700 police officers have been saved as a result of body armor.

In the early 1970s, NIJ initiated a research program to investigate the development of lightweight body armor that police could wear full time. The NIJ development project was a four-phase effort that looked at Kevlar® fabric and whether it could stop a bullet, the number of layers of material necessary and factors that could degrade the armor (e.g., moisture, ultraviolet light, dry cleaning agents, etc.), medical testing to determine required performance levels of armor, and field testing to determine wearability and effectiveness. Field testing was conducted with 5,000 armors that were provided to 15 urban police departments. The first armor "save" occurred less than 6 months later, and during the 1-year demonstration period, 18 shooting incidents occurred in which body armor successfully protected the officers.

Subsequently, and at the request of the law enforcement community, NIJ developed a voluntary body armor standards and testing program to verify the performance and safety of body armor. While NIJ's program relies on voluntary participation by manufacturers, most police departments require that armor be tested by NIJ and found in compliance with the NIJ standard before they will purchase the armor. The NIJ standard specifies minimum performance requirements that body armor must meet to be suitable for law enforcement use. The standard also includes test methods that a laboratory can follow to evaluate armor and determine whether the sample meets the minimum performance requirements. The standard provides requirements and test methods to ensure that the armor will resist penetration from bullets (e.g., 9 mm, .357 Magnum, .44 Magnum, 7.62 mm, etc.) and is rated to defeat and minimize injury from blunt trauma from a nonpenetrating bullet.

Since 1987, NIJ has tested approximately 4,000 models of armor and found more than 2,000 of these models to comply with the requirements of the body armor standard. To date, this testing has been limited to determining the performance of new armor model designs submitted to NIJ by the manufacturers and has not addressed the ongoing performance of armor in the field over time. Most, if not all, U.S. law enforcement

agencies use the NIJ program to select and procure body armor that is found in compliance with the NIJ standard. NIJ also provides publications, a Web site, a database of armor deemed compliant with the NIJ standard (http://www.justnet.org/BatPro/batSearch.asp), and trained staff who assist with armor procurement issues. NIJ works with the Bureau of Justice Assistance (BJA) to ensure that only NIJ-compliant body armor is purchased using funds provided through the Bulletproof Vest Partnership Program.

B. Body Armor Currently Used by Law Enforcement

Currently, more than 65 manufacturers worldwide have submitted armor to NIJ to validate their armor's performance in accordance with the NIJ body armor standard. While DuPont Kevlar was the first ballistic material identified for use in modern concealable body armor, there are currently four other fiber manufacturers that are the predominant producers of material used in bullet-resistant armor. They include Spectra® fiber manufactured by Honeywell, Twaron® manufactured by Teijin Twaron, Dyneema® produced by DSM, and Zylon®[1] produced by Toyobo. The NIJ body armor testing program has evaluated armor designs that include one specific material (monolithic) as well as armor designs that include a combination (hybrid) of several different ballistic materials.

Ballistic fiber can be woven into fabric or incorporated into a composite material that is used in the design of body armor. In the case of Honeywell's Spectra Shield®, ZShield®, and GoldFlex® composites, the fiber is arranged in unidirectional layers and held in place by a flexible resin. Manufacturers also use different layer counts, stitching, treatments, ballistic covers, carriers, and strapping systems. The differences between manufacturers' individual design concepts are a result of their attempts to provide an armor that will comply with the NIJ performance requirements with minimum weight and maximum comfort or wearability. These designs also attempt to address potential vulnerabilities of ballistic materials to degradation of the armor due to wear, care, and environmental factors.

The NIJ body armor standard evaluates the complete armor system and not the individual components that comprise the design. The standard has been updated four times since it was originally published in March 1972. Because NIJ's research in the 1970s showed that the penetration resistance of Kevlar fabric was degraded when wet, wet testing was included in the standard. Because there was a concern with armors' susceptibility to angle shots and multiple impacts, the standard was revised to incorporate angle shots and additional shot locations. NIJ revises the standard on an as-needed basis to address changes in threats to officers, changes in technology, and improvements in testing technology. The most recent standard is NIJ Standard–0101.04, Revision A, issued in

[1] Zylon® (PBO fiber – Poly-p-phenylenebezobisoxazole) is a high-strength organic fiber produced by Toyobo Co., Ltd.

June 2001. This version of the standard updated the labeling requirements, acceptance criteria, test ammunition, and procedures found in the 0101.03 Standard.

One issue that has been a persistent challenge for NIJ is determining the effects of age and use on armor performance. Currently, destructive ballistic testing (testing that destroys the sample tested) is the only method of accurately determining the performance of used armor. While the testing will indicate whether the tested armor defeats the bullets that it was originally designed to stop, any tested armor still must be replaced. The testing also may not be a good indicator of the performance of other armors of identical construction, because they may be of different ages and subjected to different wear, care, and environmental conditions that may affect performance.

For example, some officers may explicitly follow the manufacturer's care and maintenance instructions, while other officers may just throw their armor in the trunk of their patrol car or locker at the end of their shift. Officers also wear their armor in widely divergent climatic regions of the country, from high and low temperature extremes to high and low humidity levels.

The process of manufacturing the ballistic fiber, weaving the ballistic material into fabric, and assembling the materials into the finished product also may affect the performance characteristics of the armor. The equipment and chemicals used in the construction process all have an impact on the final product, and changes in these processes may change their performance characteristics. While the NIJ armor compliance testing program evaluates the finished product design, changes in the manufacturing process may change the performance characteristics of armor. Such changes may go unnoticed under the current testing program.

NIJ became aware of the potential problems with Zylon-based armor after the injury of a Forest Hills, Pennsylvania, police officer in the summer of 2003 (the "Forest Hills incident"). The officer was wearing Zylon-based armor at the time of the shooting, and a bullet apparently had pierced the armor. Promptly after learning of this potential armor failure, NIJ began a review of this incident to determine the potential causes of the failure. NIJ subsequently learned of two other instances in which bullets apparently penetrated Zylon-based armor worn by officers. In one of these cases, the officer was injured; in the other, the officer was killed. NIJ is currently reviewing these incidents.

III. Attorney General's Body Armor Safety Initiative

On November 17, 2003, Attorney General John Ashcroft announced the U.S. Department of Justice's Body Armor Safety Initiative regarding the performance of Zylon-based armors. The Attorney General directed NIJ immediately to—

(1) Initiate an examination of Zylon-based bullet-resistant armor (both new and used).
(2) Analyze upgrade kits provided by manufacturers to retrofit Zylon-based bullet-resistant armors.

(3) Review the existing process by which bullet-resistant armor is certified to determine if the process needs modifications.
(4) Report to the Attorney General within 90 days on status and activities.

Currently, NIJ—along with the U.S. Department of Commerce and the National Institute of Standards and Technology (NIST) (NIJ's technical partner)—is evaluating Zylon-based armor using various scientific techniques to determine its vulnerability to degradation and to help identify degradation mechanisms. This evaluation will assist in determining Zylon's performance in body armor. The evaluation includes ballistic testing as well as an analysis of chemical and mechanical properties using state-of-the-science tools and techniques. The findings from this analysis will also assist in identifying required near-term changes to the existing standards and testing program and help to inform additional research that is necessary to address long-term modifications.

The following section of this report provides the details on the status of the initiative. Although the testing of Zylon armor will not be completed until later this year, this interim report will provide an update of current testing activities, preliminary test findings and analysis, proposed future direction, and immediate recommendations for officers currently wearing Zylon-based armor.

NIJ has prepared and initiated an extensive test plan to examine Zylon-based bullet-resistant armors. This test plan will also examine the adequacy of "upgrade" kits provided by manufacturers to enhance the performance of Zylon-based bullet-resistant armors in the field. This test plan is structured as follows:

- Study of the Forest Hills incident.
- Tests to determine Zylon degradation in used armor.
- Testing of upgrade kits.
- Applied research effort to understand degradation mechanisms.

NIJ is also developing a comprehensive plan to systematically review and modify (as necessary) the standard and compliance testing program by which body armor is certified.

IV. Study of the Forest Hills Incident

While bullet-resistant body armor has an outstanding safety record in protecting public safety officers from ballistic threats and other types of injuries, a police officer in Forest Hills, Pennsylvania, was shot and seriously injured in the summer of 2003 when a bullet penetrated his Second Chance Ultima® armor made of Zylon. The Forest Hills incident is the first case reported to NIJ in which NIJ-compliant body armor appears to have failed to prevent a bullet from penetrating armor that was designed to defeat such bullets.

Immediately after being notified of this incident, staff at NIJ[2] established contact with representatives of the Forest Hills Police Department (FHPD) and the Allegheny County Police Department (the agency leading the criminal investigation into the actual shooting incident). As a result of these discussions, NIJ conducted a site visit on Monday, July 7, 2003, at the Allegheny County Crime Laboratory in Pittsburgh, where the armor and other evidence in this case are being held. The officer's armor and other evidence were reviewed. Representatives of the Allegheny County Police Department agreed to provide access to the evidentiary materials required to support the review.

In this incident, the pistol used was an autoloading pistol chambered in .40 S&W-caliber. The cartridges in the recovered pistol were .40 S&W-caliber of conventional construction. The bullet impact location was approximately 6 inches to the right (wearer's perspective) of the centerline and 4 inches from the bottom of the ballistic panel. Physical examination of the armor also strongly suggested that the penetrating bullet struck at a highly oblique angle, more oblique than the 30-degree angle evaluated during NIJ compliance testing.

On that same date, NIJ staff traveled to the Forest Hills Police Department and met with Chief William Fabrizi and Sergeant Edward Hinchey to brief them on the meeting at the crime laboratory and of the proposed course of action. NIJ offered technical assistance to the FHPD and indicated a willingness to answer any general concerns they had about body armor standards, testing, selection, and application.

As a result of the Forest Hills shooting, NIJ initiated a comprehensive examination to help determine the cause of the apparent body armor failure. NIJ is also reviewing information provided in two additional shootings in Oceanside, California, and Ravalli County, Montana, to help determine if a failure of NIJ-compliant armor occurred.

NIJ is examining the Forest Hills incident and looking at the characteristics of the weapon, bullet, ammunition, and ballistic materials. Preliminary findings are as follows:

- The firearm and ammunition used during the shooting incident were examined to determine the expected bullet velocity. This examination indicated that the bullet velocity was not greater than the velocity used during NIJ compliance testing.
- The bullet materials (chemical and mechanical properties) were similar to the bullets normally used for compliance testing; however, some differences were observed in bullet geometry and bullet deformation characteristics.
- Tensile strengths[3] of single yarns removed from the rear panel of the Forest Hills armor were up to 30-percent lower than yarns from the "new" armors supplied by Second Chance for this study.

[2] NIJ has directed efforts described in this status report through its National Law Enforcement and Corrections Technology Center–National (NLECTC–National) and its Office of Law Enforcement Standards at the National Institute of Standards and Technology (NIST-OLES). NIST is a Federal agency within the U.S. Department of Commerce that works with government and industry to develop and apply technology, measurements, and standards.

[3] Tensile strength is the maximum stress (force exerted over a given cross-sectional area) that a body (in this case, a fiber) can withstand prior to failure.

While the reduction in tensile strength of the Forest Hills panel is significant, NIJ is continuing to study other factors (e.g., shot location, shot angle, bullet rotational speed, armor stitching, etc.) that may have led to the armor penetration. At this point, it cannot be stated conclusively that the weakened condition of the fabric was the exclusive or predominant cause of the failure.

Since the Zylon in the Forest Hills armor was much weaker than expected, it will be necessary to perform ballistic testing on armor that has been weakened to a condition matching that of the penetrated armor. Several potential degradation mechanisms that could account for the loss in mechanical strength have been considered. An accelerated aging process has been started to achieve uniform degradation of the materials. Concurrent with this aging process, testing to define the ballistic material properties will be performed on the rear panel of the officer's armor by the Polymers Division of the National Institute of Standards and Technology (NIST). These results will be compared with tests done on newer materials to explore whether any obvious chemical differences exist. NIJ anticipates interim findings related to the failure of the Forest Hills armor by early March 2004 and the comprehensive report of findings to be completed during the second and third quarters of fiscal year (FY) 2004.

V. Tests to Determine Zylon Degradation in Used Armor

Toyobo, the manufacturer of Zylon, has admitted that the strength of Zylon decreases under conditions of high temperature, high humidity, and exposure to ultraviolet (UV) and visible light.[4] To combat the effects of light and humidity, ballistic panels made from Zylon must be protected by the use of an appropriate covering material. This technical information provided by Toyobo served as a starting point for the development of a comprehensive test plan to test the ballistic performance of used armor. By focusing on the known vulnerabilities of the ballistic material, NIJ has been able to design a test protocol that varies the factors that can degrade Zylon in an effort to determine which, if any, adversely affect the ongoing performance of armor in the field.

There are nearly 240 different models of Zylon-based ballistic body armor from 16 different manufacturers that have been found to comply with either NIJ Standard–0101.04 or NIJ Standard–0101.03. Preliminary information from the U.S. Department of Justice's Bulletproof Vest Partnership Program indicates that there are more than 240,000 Zylon-based armors in field use.

A multiphase, statistically based test plan has been designed that will help ensure that a representative sampling of used armors (e.g. different manufacturers, threat levels, designs, environmental conditions, age, etc.) will be tested. While the testing will not include all used Zylon armor models, this representative sampling will allow NIJ to develop broad-based conclusions regarding the ongoing performance and reliability of Zylon body armor in field use.

[4] Technical Information Bulletin, "PBO Fiber Zylon®," Toyobo Co., Ltd., revised 2001.

A. Phase I: "Worst Case Conditions"

In this phase of testing, an abbreviated series of ballistic tests (ballistic limit tests[5] and penetration tests[6]) will be performed on a limited number of used Zylon armors (approximately 32) that have been heavily worn and exposed to conditions that may adversely affect their ballistic performance (e.g., heat, humidity, UV light exposure, age, improper care, and abuse). Improper care and abuse of body armor can lead to premature—

- Compromise of the cover/carrier that protects the ballistic material.
- Exposure of the ballistic material to water, detergents, or solvents.
- Exposure of the ballistic material to light.

Ballistic limit testing is used to determine shifts in ballistic performance that may be indicative of armor degradation. Additionally, since angled ballistic shots (those shots that are at an angle, rather than perpendicular to the surface of the body armor) can be more penetrative than "straight on" shots, each ballistic panel that undergoes penetration testing will receive two shots at a 30-degree angle.

This phase of testing seeks to determine whether body armor exposed to realistically harsh conditions (that can potentially adversely affect the raw ballistic material, Zylon fiber) degrades performance to unacceptable levels. This phase of ballistic testing provides a preliminary indication of the extent of problems with Zylon body armor.

NIJ has initiated Phase I testing. To expedite testing, NIJ contacted numerous law enforcement agencies to obtain heavily worn armor that had already been taken out of service. The armors received were well worn but, from visual inspection, appeared serviceable. The very limited sampling of armors that were tested came from law enforcement agencies around the country, were of varying ages (from 8 months to 5+ years), and represented models from four different body armor manufacturers.

The front panel of each armor sample was subjected to penetration testing using the two different calibers associated with the armor's classification (Type IIA, Type II, Type IIIA, etc.). Three shots of each caliber consistent with the NIJ Standard were fired (for a total of six shots), with one of the three shots for each caliber fired at a 30-degree angle. Some of the used armor tested did not perform at a level consistent with the NIJ Standard. Preliminary results showed that 10 of the 20 armors tested were penetrated by at least 1 round. In all but one case, only a .357 magnum round penetrated the armor. However, because of the very small sample size (20 armors), it is not possible to draw any statistically based conclusions about specific manufacturers, models, service life, or geographical regions at this time.

[5] Ballistic limit testing measures the impact velocity at which a projectile is expected to completely penetrate a body armor panel 50 percent of the time.

[6] Penetration tests are those in which projectiles of a specified caliber are fired at a specified reference velocity to determine whether the projectile or fragment of the projectile penetrates the body armor panel.

Preliminary test results are consistent with the working theory that there may be degradation occurring in the ballistic performance of used Zylon-based armors. Even though the armors tested did not meet the definition of "worst case" (i.e., very heavily worn), many still experienced penetrations. Armor models that experienced bullet penetrations in this phase of testing will be analyzed further to determine what additional testing and analysis are necessary to conclude if there is a specific problem with a Zylon-based armor model, armor design, age, or susceptibility to environmental factors.

B. Phase II: Comprehensive Test Protocol

Following the first phase, a comprehensive test protocol will be followed that has been designed to evaluate fully the effects of several potential causes of armor degradation. In Phase II, approximately 500 armors will be randomly selected for testing from 5 different climatic regions, 5 different age categories, and 4 different manufacturer categories. By looking at armors from different climatic regions, the effects of temperature, humidity, and UV light on armor performance can be fully examined. Additionally, obtaining samples of different ages will allow NIJ to determine if ballistic performance decreases to unacceptable levels over a given increment of time. This will help determine whether armors are more susceptible to ballistic failure as they age, and if so, how quickly.

Lastly, testing armors from different manufacturers will allow NIJ to examine the effects that certain design features have on ballistic performance. NIJ will seek to determine whether particular designs are more susceptible to failure. Body armor from different manufacturers may—

- Use a different type of weave for the ballistic material.
- Use a different protective covering for the ballistic material.
- Use a different number of layers of ballistic material.
- Use a different stitch pattern when constructing their armors.

This broad-based testing phase will determine the ongoing performance and reliability of Zylon body armor in field use. These armors will be subjected to a series of ballistic tests similar to those in Phase I. The results of these tests will be statistically evaluated and compared with baseline test data obtained during original NIJ compliance testing. These results will indicate whether Zylon armors degrade, the general extent of the degradation, and what factors may be causing the degradation. In this phase, NIST polymers laboratories will also perform chemical and mechanical testing on the ballistic materials to determine any causes of armor failure. NIST will also determine the chemical/physical differences between any armors that fail and those that do not.

NIJ has begun gathering test armors and procuring ballistic testing services for this phase. Ballistic testing is scheduled to begin following Phase I testing.

C. Phase III: Additional Testing

As ballistic testing in Phases I and II is conducted, test results will be analyzed to determine if the causes for any Zylon armor degradation can be pinpointed. After this analysis, it may become necessary to perform additional ballistic tests. The data from the first two phases will be looked at from many perspectives to determine whether any definitive conclusions can be drawn regarding Zylon degradation and potential contributing factors. If the incidence of failure indicates a "potential" problem under a certain combination of factors (i.e., manufacturer X, model Y, age greater than Z years, specific design features, etc.), additional testing with similar samples may be needed to validate whether there is a true problem. It is envisioned that this testing, if deemed necessary, would be similar in size/scope to Phase I. Specifics of this phase and the exact testing protocol will be formulated as test results from Phases I and II begin to emerge.

Phases I and II testing and analysis will be completed by the end of FY 2004, with Phase III (if necessary) beginning later this fiscal year and ending in early FY 2005. Significant interim findings will be provided as the testing continues. At any stage during the testing process, if it can be shown that an armor model has degraded significantly, this information will immediately be made available to the public safety community and the manufacturers of those armor models.

Armor models that have degraded significantly will be removed from NIJ's list of armor that complies with the NIJ Standard, and excluded from permissible purchases under the Bulletproof Vest Partnership Program, which is administered by BJA. Manufacturers will be given the opportunity to examine their test data and provide comments to NIJ prior to a final decision on removal from the qualified products listing.

VI. Testing of Upgrade Kits

To date, one manufacturer (Second Chance Body Armor, Inc.) has developed an "upgrade kit" to be used with select models of Zylon body armor. An upgrade kit is an additional ballistic panel that is inserted into the armor to supplement the protection provided by the original armor. A series of statistically based ballistic tests, similar to those described above, will be conducted to ensure that performance of the Second Chance Ultima and Ultimax® models of body armor is acceptable when used in conjunction with the upgrade kit offered by Second Chance. Ultima and Ultimax are models of body armor constructed of Zylon by Second Chance. Second Chance has designed an upgrade kit to be used in conjunction with these two models. The "worst case" philosophy described in Phase I will also be applied to this test effort. Armor that has been subjected to various combinations of factors that would diminish ballistic-resistant performance will be obtained and tested.

For any given model selected, at least two armors will be needed. For each armor sample tested, one panel of the armor will be tested with the upgrade kit, the other without. This will provide an opportunity to obtain both "baseline" data (i.e., "used" ballistic panel without the upgrade kit) and data showing the effect of adding the upgrade kit. It is anticipated that at least 64 armors will be required for this study. Results of these tests will be compared with the original results of NIJ compliance tests performed on these models. While testing has yet to begin, used armors for this testing are currently being gathered from law enforcement and corrections agencies, and ballistic testing is forecast to be completed during the third quarter of FY 2004.

VII. Applied Research Effort to Understand Degradation Mechanism

The ballistic tests outlined above will provide some degree of insight into what environmental factors may cause Zylon to degrade. Understanding the fundamental degradation mechanisms is essential to knowing—

- What definitively causes Zylon to degrade (i.e., what chemical changes occur and what causes these changes to occur).
- What happens to Zylon as it degrades.
- How to monitor the degradation process in future armors.

In parallel with the ballistic testing of field armor, studies will be performed by NIST polymer scientists on the armors' materials of construction (i.e., ballistic panel, protective covering, etc.) to develop a scientific understanding of how ballistic-resistant materials degrade. These material studies will provide information about the causes of degradation, how body armor fails, how the existing body armor standard and testing program can be modified to address used armor, and how to assist industry in improving existing ballistic-resistant technologies.

Polymer scientists at NIST are currently studying Zylon fiber, Zylon fabric, and Zylon-based body armor in order to develop the protocol of appropriate analytical techniques (spectroscopy, gas chromatography, x-ray diffraction, thermogravimetric analysis, tensile testing, etc.) required to perform these indepth material studies. These tests will allow NIST to determine—

- Chemical differences between fibers (on both a macroscopic and microscopic level).
- Presence of trace degradation contaminants on fibers (i.e., from manufacturing processes, etc.).
- Moisture content of fibers.
- Mechanical strength differences among fibers.

In addition to studying the armor samples from the ballistic testing described above, NIST will also expose new and untreated Zylon to various precisely controlled conditions of temperature, humidity, and UV light. Comparisons will then be made between the sample armors and the artificially altered Zylon samples in an effort to determine what may have caused any changes in chemical or physical properties of used Zylon armors.

Since moisture/humidity has been identified by Toyobo as a potential cause of Zylon degradation, the various coverings used by armor manufacturers to seal Zylon fabric will also be examined. These coverings are constructed from a variety of materials and are sealed using several different methods, including stitching and heat sealing. Tests will be conducted to determine whether covering materials and covering designs keep the ballistic material dry.

There are no existing methods by which to test nondestructively the ability of a used armor to stop a bullet that it was designed and certified to stop. By determining how ballistic-resistant materials behave when they are put into armors, NIJ seeks to develop nondestructive test methods to monitor the integrity of body armor as it ages.

These efforts are underway and will be continued through FY 2005 and FY 2006.

VIII. Review of the NIJ Standard and Compliance Testing Program and Other Activities

The NIJ Standard for evaluating new armor has not traditionally been applied to evaluating used armor because of differences in usage histories and environmental exposures. NIJ has begun a thorough review of the current standard for ballistic-resistant armor and the compliance testing program. This review will take into account input from public safety agencies, organizations, and associations; manufacturers; and standards and testing organizations. The review will also take into account findings from the ballistic testing of Zylon-based armor and results from the applied materials research efforts described in the sections above.

A more detailed and comprehensive plan to review and revise the standard and testing program will be developed during the second quarter of FY 2004 following the input of participants of the Body Armor Summit. Subjects currently under consideration include in-service inspection of armor, testing protocol (increase in rounds fired during compliance testing), and the formation of a standards development working group modeled on other standards organizations (i.e., American Society for Testing and Materials (ASTM), American National Standards Institute (ANSI), etc.).

NIJ also has engaged in a variety of additional activities in support of the Attorney General's Body Armor Initiative. NIJ, along with BJA, is supporting the Office of Justice Programs' planning efforts for the summit scheduled for March 11, 2004. NIJ is developing recommendations for improved standards and testing for the summit participants' consideration. NIJ also continues to provide updated information to the field

concerning body armor and the testing program through its Web site (http://www.ojp.usdoj.gov/nij), technology centers, publications, and meetings with law enforcement stakeholder organizations.

About the National Institute of Justice

NIJ is the research, development, and evaluation agency of the U.S. Department of Justice. The Institute provides objective, independent, evidence-based knowledge and tools to enhance the administration of justice and public safety. NIJ's principal authorities are derived from the Omnibus Crime Control and Safe Streets Act of 1968, as amended (see 42 U.S.C. §§ 3721–3723).

The NIJ Director is appointed by the President and confirmed by the Senate. The Director establishes the Institute's objectives, guided by the priorities of the Office of Justice Programs, the U.S. Department of Justice, and the needs of the field. The Institute actively solicits the views of criminal justice and other professionals and researchers to inform its search for the knowledge and tools to guide policy and practice.

Strategic Goals

NIJ has seven strategic goals grouped into three categories:

Creating relevant knowledge and tools

1. Partner with State and local practitioners and policymakers to identify social science research and technology needs.
2. Create scientific, relevant, and reliable knowledge—with a particular emphasis on terrorism, violent crime, drugs and crime, cost-effectiveness, and community-based efforts—to enhance the administration of justice and public safety.
3. Develop affordable and effective tools and technologies to enhance the administration of justice and public safety.

Dissemination

4. Disseminate relevant knowledge and information to practitioners and policymakers in an understandable, timely, and concise manner.
5. Act as an honest broker to identify the information, tools, and technologies that respond to the needs of stakeholders.

Agency management

6. Practice fairness and openness in the research and development process.
7. Ensure professionalism, excellence, accountability, cost-effectiveness, and integrity in the management and conduct of NIJ activities and programs.

Program Areas

In addressing these strategic challenges, the Institute is involved in the following program areas: crime control and prevention, including policing; drugs and crime; justice systems and offender behavior, including corrections; violence and victimization; communications and information technologies; critical incident response; investigative and forensic sciences, including DNA; less-than-lethal technologies; officer protection; education and training technologies; testing and standards; technology assistance to law enforcement and corrections agencies; field testing of promising programs; and international crime control.

In addition to sponsoring research and development and technology assistance, NIJ evaluates programs, policies, and technologies. NIJ communicates its research and evaluation findings through conferences and print and electronic media.

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